

1 I claim:

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3 1. A section of piping for transporting an abrasive slurry which has improved abrasion resistance and  
4 which also exhibits ease of cleaning after use, the piping comprising:

5  
6 a tubular metal body having an exposed exterior surface and an internal surface, the internal surface  
7 of the tubular body being plated with a deposit of chromium to give the section of piping a hard  
8 chromium case which resists abrasion.

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10 2. The section of piping of claim 1, wherein the chromium case has a thickness in the range from  
11 about 0.001 to 0.035 inches.

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13 3. The section of piping of claim 2, wherein the chromium case has a thickness of approximately  
14 0.010 inches.

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16 4. A method of improving the abrasion resistance of a section of piping for transporting abrasive  
17 materials, the method comprising the steps of:

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19 providing a tubular metal body of a selected length having an exposed exterior surface and a generally  
20 cylindrical internal surface;

21  
22 exposing the internal surface of the tubular metal body to an electrolyte solution containing at least  
23 water, an electrolyte and a catalyst which provides an accelerated plating rate, the internal surface  
24 being exposed to the electrolyte solution at a current density and at a plating temperature sufficient  
25 to form a chromium deposit of desired thickness on the internal surface, whereby the internal surface  
26 of the tubular metal body is plated with a deposit of chromium to give the section of piping a hard  
27 chromium case which resists abrasion.

1 5. The method of claim 4, wherein the electrolyte solution, in addition to water, includes chromic  
2 acid and a sulfate component.

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4 6. The method of claim 5, wherein the electrolyte solution also contains an alkyl sulphonic acid and  
5 an anion of molybdenum.

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7 7. The method of claim 6, wherein the alkyl sulphonic acid is a saturated aliphatic sulphonic acid  
8 having a maximum of two carbon atoms and a maximum of six sulphonic acid groups or their salts  
9 or halogen derivatives thereon.

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11 8. The method of claim 7, further characterized in that the cathode efficiency of the process is greater  
12 than about 18%.

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14 9. The method of claim 8, wherein the current applied to the aqueous electrolyte bath is applied as  
15 pulsed direct current to provide an alloy chromium deposit having at least about 1.5% molybdenum  
16 deposited.